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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,262	07/30/2003	Xueying Huang	CL1942 US NA	3962

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EXAMINER

MORAN, MARJORIE A

ART UNIT	PAPER NUMBER
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1631

MAIL DATE	DELIVERY MODE
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07/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/630,262

Applicant(s)

HUANG ET AL.

Examiner

Marjorie Moran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-34 is/are pending in the application.
- 4a) Of the above claim(s) 16-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

Claims 16-34 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species or Invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 7/5/06.

An action on the merits of claims 1-11 and 13-15, as they read on the elected species of iron oxide, tiopronin, short chain ethylene glycol oligomers, glutathione-S-transferase/glutathione, zinc finger sequence of SEQ ID NO: 1, follows.

All rejections and objections not reiterated below are hereby withdrawn.

Information Disclosure Statement

The 1999 reference by MARTIN et al. (Adv. Mater. (1999) vol. 11, no. 12, pp. 1021-1025) has been considered and is listed on PTO Form 892 to indicate consideration thereof.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of RAGUSE et al. (WO 01/25316), KRESSE et al. (IDS ref: US 6,048,515), EWALT et al. (IDS ref: US 5,922,537), EDWARDS et al. (US 2002/0120405, filed 9/27/2000), TEMPLETON et al. (Langmuir (1999) vol. 15, lines 66-76), and CHOO et al. (WO 2001/53478).

RAGUSE teaches a film comprising cross-linked nanoparticles, wherein the cross-linkers may be proteins (p. 25, lines 11-14). His nanoparticles may comprise gold or iron, a variety of metal oxides, and may be semiconductors (p. 24, lines 28-35 and p. 25, lines 1-4). RAGUSE also teaches that his linkers may have at least two functional groups (p. 25, lines 21-29). RAGUSE does not specifically teach that his linking protein comprises a member of the pair of glutathione-S-transferase/glutathione nor a zinc-finger binding protein. RAGUSE does teach that his nanoparticles may be coated (see e.g. p. 11, lines 4-6 and 10-12), but does not teach either tiopronen nor ethylene glycol coatings.

KRESSE teaches iron oxide nanoparticles coated with low molecular weight compounds, including polyethylene glycol, which may be used to stabilize the

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nanoparticle and enhance binding of bifunctional "targeting" compounds (col. 12, lines 17-30, col. 13, lines 14-25, and col. 15, lines 3-14).

EWART teaches nanoparticles comprising iron oxide cores (col. 9, lines 35-47) and a bifunctional linker wherein a recognition molecule may be a "zinc-finger" protein (col. 7, lines 39-67 and col. 8, lines 62-68).

EDWARDS teaches use of GST/glutathione tags for selectively anchoring proteins to a solid support, specifically to a semiconductor measuring device (para 38).

TEMPLETON teaches tiopronin monolayers surrounding metallic nanoparticles, wherein tiopronin stabilizes and protects the core of the monolayer (abstract).

CHOO teaches that a zinc finger protein shown in Example 1 (page 9) binds to a sequence which is 100% identical to instant SEQ ID NO: 1, and teaches that his protein is particularly useful in biotechnology (abstract).

It would have been obvious to one of ordinary skill in the art at the time of invention to have coated the nanoparticles of RAGUSE with the low molecular weight (i.e. short chain) ethylene glycol of KRESSE and the tiopronin of TEMPLETON where the motivation would have been to stabilize the nanoparticle and enhance binding of bifunctional linking agents, as taught by both KRESSE and TEMPLETON. One skilled in the art would reasonably have expected success in coating the nanoparticle of RAGUSE with the ethylene glycol and tiopronin of KRESSE and TEMPLETON because all teach coating metal cores to create nanoparticles. It would also have been obvious to one of ordinary skill in the art at the time of invention to have used the GST tag/glutathione pair of EDWARDS as the protein linker of RAGUSE where the

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motivation would have been to use a selective anchor for attaching the bifunctional reagent to a solid nanoparticle semiconductor, as taught by EDWARDS. It also would have been obvious to have used a zinc finger protein, specifically the sequence of CHOO where the motivation would have been to use a protein which is particularly useful in biotechnology, as taught by CHOO, and which is known to be a recognition/affinity molecule for use with nanoparticles, as taught by EWART. It would also have been obvious to have used iron oxide as the core of the nanoparticle of RAGUSE, TEMPLETON, KRESE, EDWARDS and CHOO where the motivation would have been to provide a specific functionality, as taught by EDWARDS.

Applicant's arguments with respect to claims 1-11 and 13-15 have been considered but are moot in view of the new ground(s) of rejection set forth above. In response to the argument that none of the references teach a protein linker, it is noted that REGUSE teaches a protein linker, s set forth above. In response to the argument that none of the references provide a motivation to combine, it is noted that several motivations were previously set forth and are explicitly set forth in the rejection above. Expectations for success in combining the references are also set forth above.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marjorie Moran whose telephone number is 571-272-0720. The examiner can normally be reached on M-F 6:30 am- 2 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on 571-272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Marjorie Moran
Primary Examiner
Art Unit 1631

Marjorie A. Moran
6/25/07